

REMARKS

These remarks are responsive to the Final Office Action dated December 31, 2002. Claims 1-13, 15-33 are pending in the present Application. Claims 1-13 and 15-26 are rejected. Claims 1, 7, 13, 15, 17, 20, and 26 have been amended for clarification, and claims 27-33 have been added. For the reasons set forth more fully below, Applicant respectfully submits that the claims are allowable. Consequently, reconsideration, allowance and passage to issue are respectfully requested.

35 USC §102 Rejection

The Examiner rejected claims 1-4, 7-10, 13, and 15-17 under 35 U.S.C. 102(b) as being anticipated by Yagi (U.S. Pat. 4,667,270). For ease of review, independent claims 1, 7, and 13 are reproduced below:

1. (Amended) A removable visual indication structure comprising:
a removable connection portion adapted to be removably coupled to an electrical connector, the connection portion having a plurality of electrical contacts for contacting a plurality of electrical contacts of the electrical connector, the electrical connector being electrically coupled to a printed circuit board; and
a visual indication portion wherein the visual indication portion is coupled to the removable connection portion, wherein the visual indication structure can be removably attached to the printed circuit board by removing the visual indication structure from the electrical connector.
7. (Amended) A removable visual indication structure for use with a printed circuit board comprising:
a removable connector adapted to be removably attached to an electrical connector of the printed circuit board, the removable connector having at least one electrical contact for contacting at least one electrical contact of the electrical connector; and
at least one visual indicator coupled to the removable connector, wherein the visual indication structure can be removably attached to the printed circuit board by removing the removable connector from the electrical connector.

13. (Amended) A printed circuit board system comprising:
a printed circuit board;
an electrical connector electrically coupled to the printed circuit board, wherein the electrical connector includes at least one conductive electrical contact; and
at least one removable visual indication structure removably coupled to the at least one electrical contact, wherein the at least one removable visual indication structure includes a visual indication portion, wherein the visual indication portion is coupled to the at least one removable visual indication structure, and wherein the visual indication structure can be removably attached to the printed circuit board by removing the visual indication structure from the electrical connector.

Applicant respectfully traverses with the Examiner's rejection. Amended claim 1 includes a removable connection portion adapted to be removably coupled to an electrical connector, the connection portion having a plurality of electrical contacts for contacting a plurality of electrical contacts of the electrical connector, the electrical connector being electrically coupled to a printed circuit board. A visual indication portion is coupled to the removable connection portion. One embodiment of an electrical connector is shown in Fig. 6 of Applicant's specification (e.g., elements 70-76), which collect the contact pins together in this Figure.

In contrast, Yagi discloses a light emitting diode (LED) holder 18, where the LED holder receives the lead wires of an LED. The LED holder 18 is attached to a circuit board by fitting legs of the holder into mounting holes in the circuit board. It appears that, in Yagi, the LED lead wires are pushed through holes in the circuit board as at number 51 in Fig. 1 of Yagi. The LED holder 18 thus guides the lead wires of the LED to directly contact the circuit board.

Yagi does not disclose or suggest Applicant's features of claim 1, including a removable connection portion adapted to be removably coupled to an electrical connector, where the electrical connector is electrically coupled to a printed circuit board.

The LED holder 18 of Yagi is directly attached to the circuit board, and the LED lead wires are also directly connected to the circuit board. Yagi mentions or suggests nothing about providing an electrical connector between the LED holder/LED and the circuit board, nor the advantages of providing such a connector. Applicant's invention has the advantage of providing a connector between circuit board and visual indication structure, which, for example, can allow other connectors or contacts (such as a ribbon cable connector) to be attached other than the removable connection portion, as described throughout Applicant's specification, thereby allowing more versatility, allowing other visual indication devices to be connected, and saving space on the circuit board.

Applicant therefore believes claim 1 is patentable over Yagi.

Dependent claims 2-4 and new claims 27-28 are dependent on claim 1 and are patentable over Yagi for at least the same reasons as claim 1 and for additional reasons. For example, claim 3 recites a surface mount LED, which is not disclosed or suggested by Yagi; Yagi's LED holder is specifically for through-type LED's that extend through holes in the printed circuit board to be soldered on the other side of the circuit board. Claim 27 recites that the contacts of the removable connection portion are sockets and the contacts of the electrical connector are pins, which is not disclosed or suggested by Yagi; Yagi neither discloses nor suggests pins in sockets.

Amended claim 7 recites a removable visual indication structure which includes a removable connector adapted to be removably attached to an electrical connector of the printed circuit board, the removable connector having at least one electrical contact for contacting at least one electrical contact of the electrical connector. A visual indicator is coupled to the removable connector. Similar to the explanation above with reference to

claim 1, Yagi does not disclose or suggest providing a removable connector that is removably attached to an electrical connector that is electrically coupled to the printed circuit board. Yagi only disclosed providing an LED holder directly on a printed circuit board with the LED directly contacting the circuit board. For reasons similar as those explained above for claim 1, Applicant therefore believes that claim 7 is patentable over Yagi. Claims 8-10 and new claim 29 are dependent from claim 7 and are patentable for at least the same reasons and for additional reasons. For example, claim 9 recites a surface mount LED, and claim 29 recites that the electrical contact of the removable connector is at least one socket and the contact of the electrical connector is at least one pin, which are not disclosed or suggested by Yagi.

Amended claim 13 recites a printed circuit board system including a printed circuit board, electrical connector coupled to the circuit board and including at least one electrical contact, and removable visual indication structure coupled to the electrical contact of the electrical connector and including a visual indication portion. As explained above, Yagi does not disclose or suggest a visual indication structure with visual indication portion coupled to an electrical connector that is in turn coupled to a printed circuit board; Yagi's visual indication structure is directly coupled to the circuit board. Applicant therefore believes that claim 13 is patentable over Yagi. Claims 15-17 and new claims 30-32 are dependent on claim 13 and are patentable for at least the same reasons, and for additional reasons. For example, claim 16 recites a surface mount LED, claim 31 recites pins and sockets, and claim 32 recites that the electrical connector is adapted to connect to a cable connector as well as the visual indication structure, none of which are suggested in Yagi.

In view of the foregoing, Applicant respectfully requests that the rejection under 102(b) be withdrawn.

35 USC §103 Rejection

The Examiner rejected claims 5-6, 11-12, 18-19, and 20-25 under 35 U.S.C. 103 as being unpatentable over Yagi. Applicant respectfully traverses. Claims 5-6, 11-12, and 18-19 are dependent on parent claims that are explained above to be patentable over Yagi, and therefore these claims are similarly patentable for at least the same reasons, and for additional reasons. For example, claims 5, 11, and 18 recite that the LED is soldered to the surface mount connector, which is not suggested by Yagi. The Examiner states that it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together. However, this is not a case of substituting one piece for two pieces. Yagi does not solder an LED to a surface mount connector because no surface mount connector is disclosed or suggested; Yagi's invention deals with how to position through-type LEDs using gripper arms on lead wires, not how to position surface mount LEDs. Yagi does not solder an LED to his holder 18 because that holder is meant to position an LED so that its lead wires can make proper contact with the circuit board. Yagi's holder mechanism has no relevance to surface mount connectors and soldering LEDs to surface mount connectors because Yagi's whole holder mechanism is entirely meant to be used with through-type LEDs which are electrically contacted directly to the circuit board, not to the holder.

Amended claim 20 recites a method for fabricating a removable visual indication structure including providing at least one visual indicator, providing a removable connection

portion, and coupling the visual indicator to the removable connection portion, wherein the visual indication structure can be removably attached to the printed circuit board by removing the removable connection portion from the electrical connector. As explained in relation to the independent claims above, Yagi does not disclose or suggest providing a removable connection portion that is coupled to an electrical connector, which in turn is coupled to a printed circuit board, nor a removable connection portion that can be removed from such an electrical connector. Claims 21-25 and new claim 33 are dependent on claim 20 and are patentable for at least the same reasons as claim 20 and for additional reasons as explained above for similar dependent claims.

In view of the foregoing, Applicant respectfully requests that the rejection under 103(a) be withdrawn.

Attached hereto and captioned "Version with Markings to Show Changes Made" is a marked-up version of the changes made to the claims by the current amendment.


Accordingly, Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

FAX RECEIVED

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend the claims as follows:

1. (Amended) A removable visual indication structure comprising:

a removable connection portion adapted to be removably coupled to an electrical connector, the connection portion having a plurality of electrical contacts for contacting a plurality of electrical contacts of the electrical connector, the electrical connector being electrically coupled to a circuit of a printed circuit board; and

a visual indication portion wherein the visual indication portion is [non-removably] coupled to the removable connection portion, wherein the visual indication structure can be removably attached to [a] the printed circuit board by removing the visual indication structure from the electrical connector.

7. (Amended) A removable visual indication structure for use with a printed circuit board comprising:

a removable connector adapted to be removably attached to an electrical connector electrically coupled to the printed circuit board, the removable connector having at least one electrical contact for contacting at least one electrical contact of the electrical connector; and

at least one visual indicator coupled to the removable connector, wherein the visual indication structure can be removably attached to the printed circuit board by removing the removable connector from the electrical connector.

13. (Amended) A printed circuit board system comprising:

a printed circuit board;

an electrical connector [at least one pin] electrically coupled to the printed circuit board, wherein the electrical connector includes at least one conductive electrical contact;
and

at least one removable visual indication structure removably coupled to the at least one [pin] electrical contact, wherein the at least one removable visual indication structure includes a visual indication portion, wherein the visual indication portion is [non-removably] coupled to the at least one removable visual indication structure, and wherein the visual indication structure can be removably attached to the printed circuit board by removing the visual indication structure from the electrical connector.

15. (Amended) The system of claim 13 wherein the at least one visual [indicator] indication portion comprises an LED.

17. (Amended) The system of claim [16] 30 wherein the removable connector comprises a surface mount connector.

20. (Amended) A method for fabricating a removable visual indication structure for a printed circuit board comprising the steps of:

(d) providing at least one visual indicator;

(e) providing a removable [connector] connection portion adapted to be

removably coupled to an electrical connector, the connection portion having a plurality of electrical contacts for contacting a plurality of electrical contacts of the electrical connector, the electrical connector being electrically coupled to the printed circuit board;
and

(f) [non-removably] coupling the at least one visual indicator to the removable [connector] connection portion, wherein the visual indication structure can be removably attached to the printed circuit board by removing the removable connection portion from the electrical connector.

26. (Amended) The system of claim [13] 30 wherein the removable connection portion is a flat ribbon cable connector.

Please add the following claims:

27. (New) The removable visual indication structure of claim 1 wherein the electrical contacts of the removable connection portion are a plurality of sockets and the electrical contacts of the electrical connector are a plurality of pins, wherein the sockets receive the pins to establish electrical contact.

28. (New) The removable visual indication structure of claim 27 wherein the sockets of the connection portion are provided in a surface mount connector.

29. (New) The removable visual indication structure of claim 7 wherein the at least one

electrical contact of the removable connector is at least one socket and the at least one electrical contact of the electrical connector is at least one pin, wherein the at least one socket receives the at least one pin to establish electrical contact.

30. (New) The system of claim 13 wherein the visual indication structure includes a removable connection portion connected to the visual indication portion and connected to the at least one electrical contact of the electrical connector.

31. (New) The system of claim 13 wherein the at least one electrical contact of the electrical connector is at least one pin and the visual indication structure includes at least one socket for receiving the at least one pin of the electrical connector to establish electrical contact.

32. (New) The system of claim 13 wherein the electrical connector is adapted to connect to a cable connector as well as the visual indication structure.

33. (New) The method of claim 20 wherein the electrical contacts of the connection portion are a plurality of sockets and the electrical contacts of the electrical connector are a plurality of pins, wherein the sockets receive the pins to establish electrical contact.